REMARKS

Claims 1-22 were pending.
Claim 1 is amended.
Claim 22 is cancelled.
Claims 1-21 are pending.

Double Patenting Rejections

In regard to the examiner's comment that Hughes teaches the presently claimed process steps: Examiner states that Hughes is directed to a process comprising the steps of forming a fermentation product at a temperature of at least 50 C (i) and (ii). However, the present claims are directed to treating a fermentation liquor (produced in a fermentation process) and Hughes is directed to hydrolyzing a polysaccharide at 50 C.

Examiner believes that Hughes additionally teaches subjecting the mixture to one or more separation stage, separating the fermentation product from the broth by employing one or more flocculation agents ((ii) and (viii)), by introducing cationic and anionic polymers into the mixture, swellable clays and silica based material, solid by-product is lignin and analogous material, and germentation product is ethanol, glycerol, and amino acids.

While Hughes does teach subjecting the mixture to one or more separation stages ((iii) and (viii)), **the only separation stages taught by Hughes which use flocculants such as water-soluble polymers, water-swellable polymers and charged microparticulate material are in stage (iii)**. Stage (iii) does not treat a fermentation liquor as presently claimed.

Thus the presently claimed steps are different and unobvious in light of Hughes. Hughes does not suggest or teach the step of treating a fermentation liquor (produced in a fermentation process).

Amended Claim 1

Basis for the claim 1 amendment may be found in the original claim 22 as well as on page 1, lines 14 to 15.

35 USC 103 (a)

Now, the fermentation product is clearly specified to be an alcohol or acetone which is often produced in the same fermentation process together with ethanol and n-butanol (called ABE process).

Therefore, the instant process differs from the process of Verser et al. in the fermentation product.

Although Verser et al. relates to a process of producing ethanol as an end product, the process comprises the following steps (cf. claim 1):

(a) fermenting a medium comprising a carbohydrate source into acetate, acetic acid or mixtures thereof;

(b) esterifying said acetate, acetetic acid or mixtures thereof to an acetic acid ester in the presence of an alcohol; and

(c) hydrogenating said acetic acid ester to said ethanol and said alcohol, wherein hydrogen for said step of hydrogenating is produced by a method ...

Thus, only the first step is a fermentation process and the fermentation product is acetate, acetic acid or a mixture thereof or lactic acid, as explained below. The end product ethanol is produced after a chemical conversion without any assistance of a microorganism.

Verser et al. disclose 3 solids-liquid separation steps:

1) As the fermentation process (a) is preferably a two-step process, the first step uses a homofermentative lactic acid bacteria to convert the bulk of the fermentable sugars into lactic acid and single cell protein (cf. col. 9, lines 44-50). The resulting fermentation liquor is clarified using a centrifuge. The concentrate contains the lactic acid bacteria and is sent to single cell protein recovery (cf. col. 10, lines 50-53).
   The first solids-liquid separation step (centrifugation) is performed after lactic acid is produced as a fermentation product, and the fermentation liquor has not been subjected to a temperature of at least 50 °C.

2) The second solids-liquid separation step is performed after the second fermentation step using a combination of a centrifuge, a microfilter and a nanofilter. Although the fermentation step may be done at higher temperature, around 60°C, (cf. col. 11, lines 18-21 and 26-29; col. 12, lines 29-31), the fermentation product is here acetate or acetic acid.

3) The third separation step is performed after the conversion of acetate (or acetic acid) to an ester. This conversion includes firstly the acidification of the fermentation liquor with CO_2 to produce acetic acid and precipitate $CaCO_3$, secondly the esterification of the formed acetic acid with an alcohol to form a volatile ester and finally the reactive distillation (cf. col. 13, lines 28-31; col. 14, line 59 to col. 15, line 5).
The residue after the distillation is a mixture containing suspended $CaCO_3$, EtOH and $CaCO_3$ which, after removing ethanol in a stripping section, is subjected to a solids-liquid step, such as centrifugation or filtration (cf. col. 16, lines 2-5 and 17-25).
Even if ethanol is not removed, this is not a fermentation product, but it is added for the conversion.

Thus the Verser process does not disclose a solids-liquid separation step "wherein the fermentation liquor is produced in a fermentation process for the production of a fermentation product selected from the group consisting of ethanol, glycerol, acetone, n-butanol, butanediol and isopropanol."

Hence, the instant process is different from Verser et al. Even if a person skilled in the art added any flocculating agents in any solids-liquid steps of Verser et al., one would not arrive at the invention on hand.

Neither Coffey nor Savage make up for the deficiencies of Verser.

Therefore, subject-matter of claim 1 and the dependent claims is not rendered obvious by Verser, Coffey and savage.

Reconsideration and withdrawal of the rejection of claims 1-21 is respectfully solicited in light of the remarks and amendments *supra*.

Since there are no other grounds of objection or rejection, passage of this application to issue with claims1-21 is earnestly solicited.

Applicants submit that the present application is in condition for allowance. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,

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